CENTER FOR

ACOUSTIC COOLING

UNIVERSITY OF UTAH

CENTER

The Center for Acoustic Cooling Technologies has been established for the development of high frequency thermoacoustic engines for cooling applications. The Center is based on two thermoacoustic principles. The first principle is that heat can generate sound, the second is that sound can be used to pump heat. An important application for the above devices is in the heat management of computers, lap-tops, and microcircuits.

Can you imagine…..

A miniature cooling device that replaces fans in airplane cockpit displays and personal computers using sound as the main energy source and measuring from 4 cm to less than 1 cm?

ACCOMPLISHMENTS

The Center for Acoustic Cooling is structured on fundamental developments of miniature thermo-acoustic devices supported by the Office of Naval Research, the interfacing of devices to microcircuits and computers as supported by DARPA (HERETIC Program), and industrial collaboration with a local company, for the development and commercialization of Center technologies. Prototype devices have been constructed and successfully demonstrated by an independent company.

TECHNOLOGY

The Center's technology is based on two effects in thermo acoustics. The first is that heat can be converted into sound energy; and second, that sound can pump heat. Both have been developed into devices with dimensions ranging from 4 cm to 0.8 cm, with the possibility for further miniaturization and microcircuit integration.

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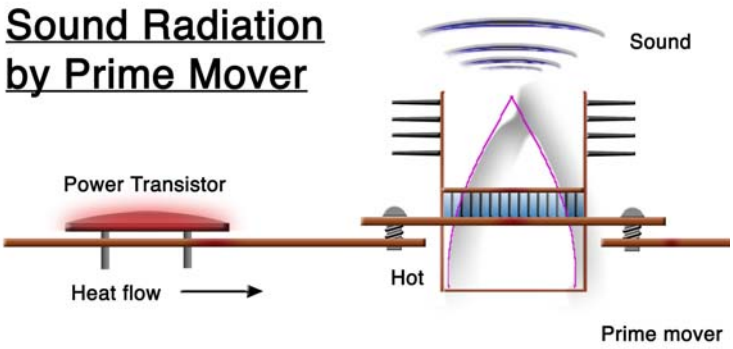
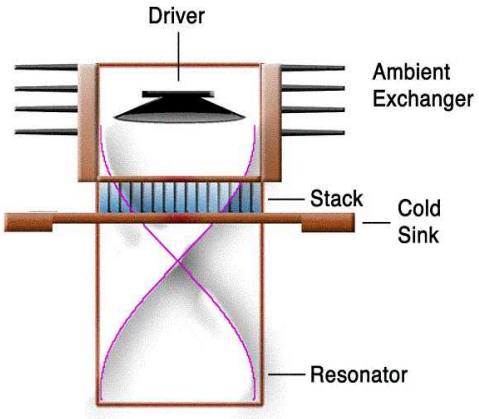
Figures below show the basic units for circuit applications: spot-cooling of heat pumping, and heat removal by acoustic radiation and energy conversion to electricity.





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